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Sequence Listing was accepted with existing errors.

See attached Validation Report.

If you need help call the Patent Electronic Business Center at (866)  
217-9197 (toll free).

Reviewer: Anne Corrigan

Timestamp: Thu Jun 07 20:32:02 EDT 2007

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Application No: 10633850

Version No: 2.1

Input Set:

Output Set:

Started: 2007-06-07 20:31:45.592

Finished: 2007-06-07 20:31:49.766

Elapsed: 0 hr(s) 0 min(s) 4 sec(s) 174 ms

Total Warnings: 29

Total Errors: 1

No. of SeqIDs Defined: 113

Actual SeqID Count: 113

Error code	Error Description
E 257	Invalid sequence data feature in <221> in SEQ ID (4)
W 213	Artificial or Unknown found in <213> in SEQ ID (26)
W 213	Artificial or Unknown found in <213> in SEQ ID (27)
W 213	Artificial or Unknown found in <213> in SEQ ID (28)
W 213	Artificial or Unknown found in <213> in SEQ ID (29)
W 213	Artificial or Unknown found in <213> in SEQ ID (30)
W 213	Artificial or Unknown found in <213> in SEQ ID (31)
W 213	Artificial or Unknown found in <213> in SEQ ID (32)
W 213	Artificial or Unknown found in <213> in SEQ ID (33)
W 213	Artificial or Unknown found in <213> in SEQ ID (34)
W 213	Artificial or Unknown found in <213> in SEQ ID (35)
W 213	Artificial or Unknown found in <213> in SEQ ID (36)
W 213	Artificial or Unknown found in <213> in SEQ ID (37)
W 213	Artificial or Unknown found in <213> in SEQ ID (38)
W 213	Artificial or Unknown found in <213> in SEQ ID (39)
W 213	Artificial or Unknown found in <213> in SEQ ID (40)
W 213	Artificial or Unknown found in <213> in SEQ ID (41)
W 213	Artificial or Unknown found in <213> in SEQ ID (42)
W 213	Artificial or Unknown found in <213> in SEQ ID (43)
W 213	Artificial or Unknown found in <213> in SEQ ID (44)

**Input Set:**

**Output Set:**

**Started:** 2007-06-07 20:31:45.592  
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Error code	Error Description
W 213	Artificial or Unknown found in <213> in SEQ ID (45) This error has occurred more than 20 times, will not be displayed

# SEQUENCE LISTING

<110> Hanley-Bowdoin, Linda  
 Orozco, Beverly M.  
 Gruissem, Wilhelm

<120> GEMINIVIRUS RESISTANT TRANSGENIC PLANTS

<130> 5051.458IP

<140> US 10/633,850

<141> 2003-08-04

<150> US 09/289,346

<151> 1999-04-09

<150> US 60/125,004

<151> 1999-03-18

<160> 113

<170> PatentIn version 3.3

<210> 1

<211> 352

<212> PRT

<213> Tomato golden mosaic virus

<400> 1

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Leu	Thr	Tyr	Pro	Gln	Cys	Ser	Leu	Ser	Lys	Glu	Glu	Ser	Leu	Ser	Gln
			20					25					30		

Leu	Gln	Ala	Leu	Asn	Thr	Pro	Ile	Asn	Lys	Lys	Phe	Ile	Lys	Ile	Cys
	35						40					45			

Arg	Glu	Leu	His	Glu	Asp	Gly	Gln	Pro	His	Leu	His	Val	Leu	Ile	Gln
	50					55				60					

Phe	Glu	Gly	Lys	Tyr	Cys	Cys	Gln	Asn	Gln	Arg	Phe	Phe	Asp	Leu	Val
65					70					75				80	

Ser	Pro	Thr	Arg	Ser	Ala	His	Phe	His	Pro	Asn	Ile	Gln	Arg	Ala	Lys
				85						90				95	

Ser	Ser	Ser	Asp	Val	Lys	Thr	Tyr	Ile	Asp	Lys	Asp	Gly	Asp	Thr	Leu
				100						105				110	

Val	Trp	Gly	Glu	Phe	Gln	Val	Asp	Gly	Arg	Ser	Ala	Arg	Gly	Gly	Cys	115	120	125	
Gln	Thr	Ser	Asn	Asp	Ala	Ala	Ala	Glu	Ala	Leu	Asn	Ala	Ser	Ser	Lys	130	135	140	
Glu	Glu	Ala	Leu	Gln	Ile	Ile	Arg	Glu	Lys	Ile	Pro	Glu	Lys	Tyr	Leu	145	150	155	160
Phe	Gln	Phe	His	Asn	Leu	Asn	Ser	Asn	Leu	Asp	Arg	Ile	Phe	Asp	Lys	165	170	175	
Thr	Pro	Glu	Pro	Trp	Leu	Pro	Pro	Phe	His	Val	Ser	Ser	Phe	Thr	Asn	180	185	190	
Val	Pro	Asp	Glu	Met	Arg	Gln	Trp	Ala	Glu	Asn	Tyr	Phe	Gly	Lys	Ser	195	200	205	
Ser	Ala	Ala	Arg	Pro	Glu	Arg	Pro	Ile	Ser	Ile	Ile	Ile	Glu	Gly	Asp	210	215	220	
Ser	Arg	Thr	Gly	Lys	Thr	Met	Trp	Ala	Arg	Ser	Leu	Gly	Pro	His	Asn	225	230	235	240
Tyr	Leu	Ser	Gly	His	Leu	Asp	Leu	Asn	Ser	Arg	Val	Tyr	Ser	Asn	Lys	245	250	255	
Val	Glu	Tyr	Asn	Val	Ile	Asp	Asp	Val	Thr	Pro	Gln	Tyr	Leu	Lys	Leu	260	265	270	
Lys	His	Trp	Lys	Glu	Leu	Ile	Gly	Ala	Gln	Arg	Asp	Trp	Gln	Thr	Asn	275	280	285	
Cys	Lys	Tyr	Gly	Lys	Pro	Val	Gln	Ile	Lys	Gly	Gly	Ile	Pro	Ser	Ile	290	295	300	
Val	Leu	Cys	Asn	Pro	Gly	Glu	Gly	Ala	Ser	Tyr	Lys	Val	Phe	Leu	Asp	305	310	315	320
Lys	Glu	Glu	Asn	Thr	Pro	Leu	Lys	Asn	Trp	Thr	Phe	His	Asn	Ala	Lys	325	330	335	

Phe Val Phe Leu Asn Ser Pro Leu Tyr Gln Ser Ser Thr Gln Ser Ser  
340 345 350

<210> 2  
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<213> Tomato golden mosaic virus

<220>  
<221> MISC\_FEATURE  
<222> (1)..(70)  
<223> Wild-type TGMV AL1 amino acids 111-180

<400> 2

Thr Leu Val Trp Gly Glu Phe Gln Val Asp Gly Arg Ser Ala Arg Gly  
1 5 10 15

Gly Cys Gln Thr Ser Asn Asp Ala Ala Ala Glu Ala Leu Asn Ala Ser  
20 25 30

Ser Lys Glu Glu Ala Leu Gln Ile Ile Arg Glu Lys Ile Pro Glu Lys  
35 40 45

Tyr Leu Phe Gln Phe His Asn Leu Asn Ser Asn Leu Asp Arg Ile Phe  
50 55 60

Asp Lys Thr Pro Glu Pro  
65 70

<210> 3  
<211> 70  
<212> PRT  
<213> Tomato golden mosaic virus

<220>  
<221> MISC\_FEATURE  
<222> (12)..(15)  
<223> RS-R125 (Ala1) mutation

<400> 3

Thr Leu Val Trp Gly Glu Phe Gln Val Asp Gly Ala Ala Ala Ala Gly  
1 5 10 15

Gly Cys Gln Thr Ser Asn Asp Ala Ala Ala Glu Ala Leu Asn Ala Ser  
20 25 30

Ser Lys Glu Glu Ala Leu Gln Ile Ile Arg Glu Lys Ile Pro Glu Lys  
35 40 45

Tyr Leu Phe Gln Phe His Asn Leu Asn Ser Asn Leu Asp Arg Ile Phe  
50 55 60

Asp Lys Thr Pro Glu Pro  
65 70

<210> 4  
<211> 70  
<212> PRT  
<213> Tomato golden mosaic virus

<220>  
<221> MICS\_FEATURE  
<222> (27)..(36)  
<223> E--N140 + KEE146 (Ala4+5) mutation

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Thr Leu Val Trp Gly Glu Phe Gln Val Asp Gly Arg Ser Ala Arg Gly  
1 5 10 15

Gly Cys Gln Thr Ser Asn Asp Ala Ala Ala Ala Ala Leu Ala Ala Ser  
20 25 30

Ser Ala Ala Ala Ala Leu Gln Ile Ile Arg Glu Lys Ile Pro Glu Lys  
35 40 45

Tyr Leu Phe Gln Phe His Asn Leu Asn Ser Asn Leu Asp Arg Ile Phe  
50 55 60

Asp Lys Thr Pro Glu Pro  
65 70

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<223> REK154 (Ala6) mutation

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Thr Leu Val Trp Gly Glu Phe Gln Val Asp Gly Arg Ser Ala Arg Gly  
1 5 10 15

Gly Cys Gln Thr Ser Asn Asp Ala Ala Ala Glu Ala Leu Asn Ala Ser  
20 25 30

Ser Lys Glu Glu Ala Leu Gln Ile Ile Ala Ala Ala Ile Pro Glu Lys  
35 40 45

Tyr Leu Phe Gln Phe His Asn Leu Asn Ser Asn Leu Asp Arg Ile Phe  
50 55 60

Asp Lys Thr Pro Glu Pro  
65 70

<210> 6

<211> 70

<212> PRT

<213> Tomato golden mosaic virus

<220>

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<222> (47)..(49)

<223> EKY159 (Ala7) mutation

<400> 6

Thr Leu Val Trp Gly Glu Phe Gln Val Asp Gly Arg Ser Ala Arg Gly  
1 5 10 15

Gly Cys Gln Thr Ser Asn Asp Ala Ala Ala Glu Ala Leu Asn Ala Ser  
20 25 30

Ser Lys Glu Glu Ala Leu Gln Ile Ile Arg Glu Lys Ile Pro Ala Ala  
35 40 45

Ala Leu Phe Gln Phe His Asn Leu Asn Ser Asn Leu Asp Arg Ile Phe  
50 55 60

Asp Lys Thr Pro Glu Pro  
65 70

<210> 7

<211> 70



<212> PRT  
<213> Tomato golden mosaic virus

<220>  
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<222> (52)..(55)  
<223> Q-HN165 (Ala8) mutation

<400> 7

Thr Leu Val Trp Gly Glu Phe Gln Val Asp Gly Arg Ser Ala Arg Gly  
1 5 10 15

Gly Cys Gln Thr Ser Asn Asp Ala Ala Ala Glu Ala Leu Asn Ala Ser  
20 25 30

Ser Lys Glu Glu Ala Leu Gln Ile Ile Arg Glu Lys Ile Pro Glu Lys  
35 40 45

Tyr Leu Phe Ala Phe Ala Ala Leu Asn Ser Asn Leu Asp Arg Ile Phe  
50 55 60

Asp Lys Thr Pro Glu Pro  
65 70

<210> 8  
<211> 70  
<212> PRT  
<213> Tomato golden mosaic virus

<220>  
<221> MISC\_FEATURE  
<222> (59)..(62)  
<223> N-DR172 (Ala9) mutation

<400> 8

Thr Leu Val Trp Gly Glu Phe Gln Val Asp Gly Arg Ser Ala Arg Gly  
1 5 10 15

Gly Cys Gln Thr Ser Asn Asp Ala Ala Ala Glu Ala Leu Asn Ala Ser  
20 25 30

Ser Lys Glu Glu Ala Leu Gln Ile Ile Arg Glu Lys Ile Pro Glu Lys  
35 40 45

Tyr Leu Phe Gln Phe His Asn Leu Asn Ser Ala Leu Ala Ala Ile Phe

Asp Lys Thr Pro Glu Pro  
65 70

<210> 9  
<211> 70  
<212> PRT  
<213> Tomato golden mosaic virus

<220>  
<221> MISC\_FEATURE  
<222> (7)..(8)  
<223> FQ118 (Ala13) mutation

<400> 9

Thr Leu Val Trp Gly Glu Ala Ala Val Asp Gly Arg Ser Ala Arg Gly  
1 5 10 15

Gly Cys Gln Thr Ser Asn Asp Ala Ala Ala Glu Ala Leu Asn Ala Ser  
20 25 30

Ser Lys Glu Glu Ala Leu Gln Ile Ile Arg Glu Lys Ile Pro Glu Lys  
35 40 45

Tyr Leu Phe Gln Phe His Asn Leu Asn Ser Asn Leu Asp Arg Ile Phe  
50 55 60

Asp Lys Thr Pro Glu Pro  
65 70

<210> 10  
<211> 70  
<212> PRT  
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<220>  
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<223> D120 (Ala14) mutation

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1 5 10 15

Gly Cys Gln Thr Ser Asn Asp Ala Ala Ala Glu Ala Leu Asn Ala Ser  
20 25 30

Ser Lys Glu Glu Ala Leu Gln Ile Ile Arg Glu Lys Ile Pro Glu Lys  
35 40 45

Tyr Leu Phe Gln Phe His Asn Leu Asn Ser Asn Leu Asp Arg Ile Phe  
50 55 60

Asp Lys Thr Pro Glu Pro  
65 70

<210> 11  
<211> 70  
<212> PRT  
<213> Tomato golden mosaic virus

<220>  
<221> MISC\_FEATURE  
<222> (24)..(26)  
<223> AAA136 (Leu) mutation

<400> 11

Thr Leu Val Trp Gly Glu Phe Gln Val Asp Gly Arg Ser Ala Arg Gly  
1 5 10 15

Gly Cys Gln Thr Ser Asn Asp Leu Leu Leu Glu Ala Leu Asn Ala Ser  
20 25 30

Ser Lys Glu Glu Ala Leu Gln Ile Ile Arg Glu Lys Ile Pro Glu Lys  
35 40 45

Tyr Leu Phe Gln Phe His Asn Leu Asn Ser Asn Leu Asp Arg Ile Phe  
50 55 60

Asp Lys Thr Pro Glu Pro  
65 70

<210> 12  
<211> 70  
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<220>  
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<222> (19)..(20)  
<223> QT130 (Ala2) mutation

<400> 12

Thr Leu Val Trp Gly Glu Phe Gln Val Asp Gly Arg Ser Ala Arg Gly  
1 5 10 15

Gly Cys Ala Ala Ser Asn Asp Ala Ala Ala Glu Ala Leu Asn Ala Ser  
20 25 30

Ser Lys Glu Glu Ala Leu Gln Ile Ile Arg Glu Lys Ile Pro Glu Lys  
35 40 45

Tyr Leu Phe Gln Phe His Asn Leu Asn Ser Asn Leu Asp Arg Ile Phe  
50 55 60

Asp Lys Thr Pro Glu Pro  
65 70

<210> 13  
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<212> PRT  
<213> Tomato golden mosaic virus

<220>  
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<222> (22)..(23)  
<223> ND133 (Ala3) mutation

<400> 13

Thr Leu Val Trp Gly Glu Phe Gln Val Asp Gly Arg Ser Ala Arg Gly  
1 5 10 15

Gly Cys Gln Thr Ser Ala Ala Ala Ala Ala Glu Ala Leu Asn Ala Ser  
20 25 30

Ser Lys Glu Glu Ala Leu Gln Ile Ile Arg Glu Lys Ile Pro Glu Lys  
35 40 45

Tyr Leu Phe Gln Phe His Asn Leu Asn Ser Asn Leu Asp Arg Ile Phe  
50 55 60

Asp Lys Thr Pro Glu Pro  
65 70

<210> 14  
<211> 70  
<212> PRT  
<213> Tomato golden mosaic virus

<220>  
<221> MISC\_FEATURE  
<222> (27)..(30)  
<223> E--N140 (Ala4) mutation

<400> 14

Thr Leu Val Trp Gly Glu Phe Gln Val Asp Gly Arg Ser Ala Arg Gly  
1 5 10 15

Gly Cys Gln Thr Ser Asn Asp Ala Ala Ala Ala Ala Leu Ala Ala Ser  
20 25 30

Ser Lys Glu Glu Ala Leu Gln Ile Ile Arg Glu Lys Ile Pro Glu Lys  
35 40 45

Tyr Leu Phe Gln Phe His Asn Leu Asn Ser Asn Leu Asp Arg Ile Phe  
50 55 60

Asp Lys Thr Pro Glu Pro  
65 70

<210> 15  
<211> 70  
<212> PRT  
<213> Tomato golden mosaic virus

<220>  
<221> MISC\_FEATURE  
<222> (34)..(36)  
<223> KEE146 (Ala5) mutation

<400> 15

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1 5 10 15

Gly Cys Gln Thr Ser Asn Asp Ala Ala Ala Glu Ala Leu Asn Ala Ser  
20 25 30

Ser Ala Ala Ala Ala Leu Gln Ile Ile Arg Glu Lys Ile Pro Glu Lys  
35 40 45

Tyr Leu Phe Gln Phe His Asn Leu Asn Ser Asn Leu Asp Arg Ile Phe  
50 55 60

Asp Lys Thr Pro Glu Pro  
65 70

<210> 16  
<211> 70  
<212> PRT  
<213> Tomato golden mosaic virus

<220>  
<221> MISC\_FEATURE  
<222> (66)..(69)  
<223> K--E179 (Ala10) mutation

<400> 16

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1 5 10 15

Gly Cys Gln Thr Ser Asn Asp Ala Ala Glu Ala Leu Asn Ala Ser  
20 25 30

Ser Lys Glu Glu Ala Leu Gln Ile Ile Arg Glu Lys Ile Pro Glu Lys  
35 40 45

Tyr Leu Phe Gln Phe His Asn Leu Asn Ser Asn Leu Asp Arg Ile Phe  
50 55 60

Asp Ala Thr Pro Ala Pro  
65 70

<210> 17  
<211> 70  
<212> PRT  
<213> Tomato golden mosaic virus

<220>  
<221> MISC\_FEATURE  
<222> (34)..(34)  
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<400> 17

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 Gly Cys Gln Thr Ser Asn Asp Ala Ala Ala Glu Ala Leu Asn Ala Ser  
                   20                    25                    30  
 Ser Ala Glu Glu Ala Leu Gln Ile Ile Arg Glu Lys Ile Pro Glu Lys  
                   35                    40                    45  
 Tyr Leu Phe Gln Phe His Asn Leu Asn Ser Asn Leu Asp Arg Ile Phe  
                   50                    55                    60  
 Asp Lys Thr Pro Glu Pro  
 65                    70

<210> 18  
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<220>  
 <221> MISC\_FEATURE  
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<400> 18

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 1                    5                    10                    15

Gly Cys Gln Thr Ser Asn Asp Ala Ala Ala Glu Ala Leu Asn Ala Ser  
                   20                    25                    30

Ser Lys Ala Glu Ala Leu Gln Ile Ile Arg Glu Lys Ile Pro Glu Lys  
                   35                    40                    45

Tyr Leu Phe Gln Phe His Asn Leu Asn Ser Asn Leu Asp Arg Ile Phe  
                   50                    55                    60

Asp Lys Thr Pro Glu Pro  
 65                    70

<210> 19  
 <211> 70  
 <212> PRT  
 <213> Tomato golden mosaic virus

<220>

<221> MISC\_FEATURE

<222> (36)..(36)

<223> E146 mutation

<400> 19

Thr Leu Val Trp Gly Glu Phe Gln Val Asp Gly Arg Ser Ala Arg Gly  
1 5 10 15

Gly Cys Gln Thr Ser Asn Asp Ala Ala Ala Glu Ala Leu Asn Ala Ser  
20 25 30

Ser Lys Glu Ala Ala Leu Gln Ile Ile Arg Glu Lys Ile Pro Glu Lys  
35 40 45

Tyr Leu Phe Gln Phe His Asn Leu Asn Ser Asn Leu Asp Arg Ile Phe  
50 55 60

Asp Lys Thr Pro Glu Pro  
65 70

<210> 20

<211> 70

<212> PRT

<213> Tomato golden mosaic virus

<220>

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<222> (35)..(36)

<223> EE146 mutation

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Gly Cys Gln Thr Ser Asn Asp Ala Ala Ala Glu Ala Leu Asn Ala Ser  
20 25 30

Ser Lys Ala Ala Ala Leu Gln Ile Ile Arg Glu Lys Ile Pro Glu Lys  
35 40 45